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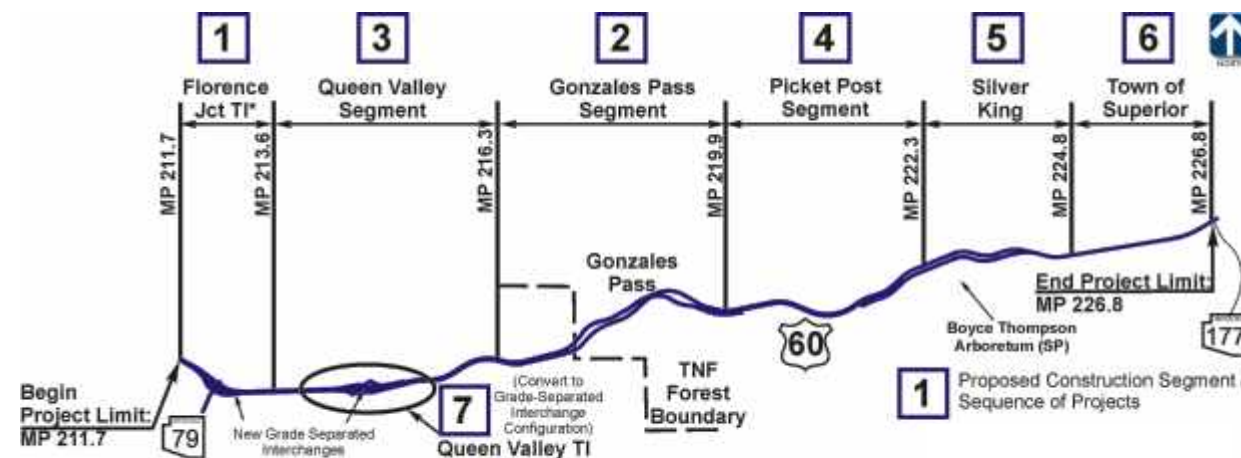
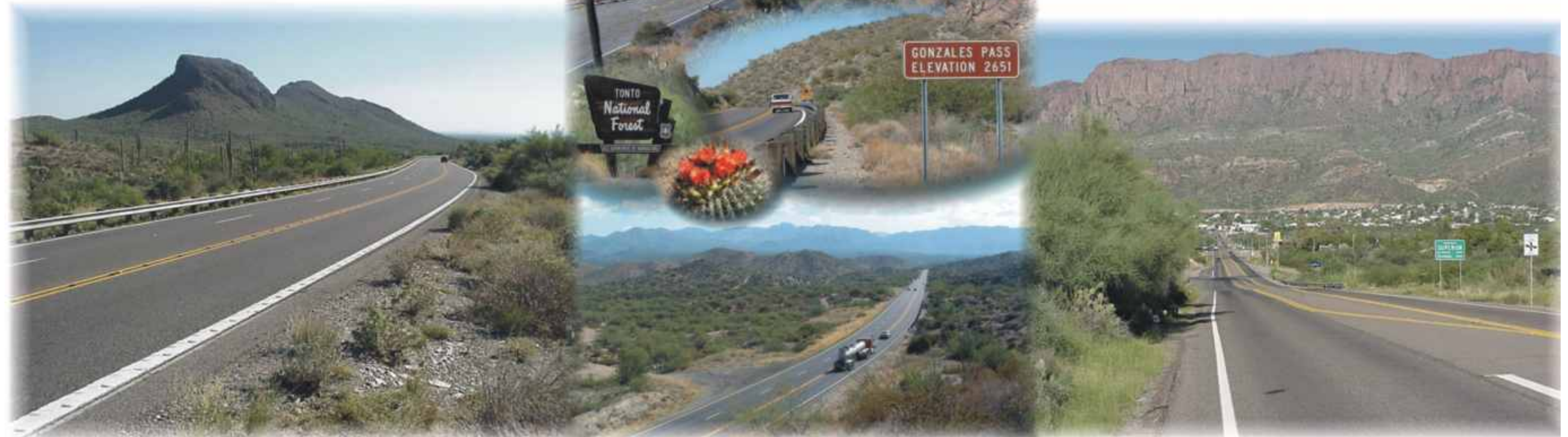
ARIZONA DEPARTMENT OF
TRANSPORTATION
205 South 17th Avenue
Phoenix, Arizona 85007

Prepared by:



875 West Elliot Road, Suite 201
Tempe, Arizona 85284

Design Concept Report Final Report May, 2004



**US Route 60:
Florence Jct to Superior
Phoenix - Globe Highway**
TRACS No. 060 PN 212 H4662 01L
Globe District - Pinal County

ARIZONA DEPARTMENT OF TRANSPORTATION

OFFICE MEMO

INTERMODAL TRANSPORTATION DIVISION

April 2, 2004

TO: RICK POWERS, GLOBE DISTRICT, G300

BAHRAM DARIUSH, PROJECT MANAGER, 614E

DAVE ALLOCCO, ASSISTANT STATE ENGINEER, 611E

FROM: VINCENT LI, ROADWAY PREDESIGN, 050P

SUBJECT: DESIGN MEMORANDUM

60 PN 212.00 H466201L

FLORENCE JCT-SUPERIOR

PHOENIX-GLOBE HIGHWAY

US 60

This memorandum is prepared pursuant to Section 3.3 of the ADOT Action Plan for Federal-Aid Highway projects. The proposed major design features for this project are described in the attached Final Design Concept Report.

Your concurrence/approval on the proposed major design features is requested.

Mary Viparina

MARY VIPARINA, ROADWAY PREDESIGN MANAGER, 050P

Concurrence:

Rick Powers

RICK POWERS, GLOBE DISTRICT, G300

5/28/04

Date

Concurrence:

Bahram Dariush

BAHRAM DARIUSH, PROJECT MANAGER, 614E

6/03/04

Date

Approved:

Mary Viparina

DAVE ALLOCCO, ASSISTANT STATE ENGINEER-ROADWAY, 611E

MARY VIPARINA

6/4/04

Date

MITIGATION MEASURES

Mitigation measures have been defined to avoid or minimize the environmental impacts of the selected alternative. These mitigation measures are not subject to change without prior written approval from the Federal Highway Administration.

Arizona Department of Transportation Design Responsibilities

1. Affected grazing permittees, mining claimants, and the Arizona Department of Transportation Right-of-Way Group will be notified of anticipated impacts to grazing leases, cattle crossings and mining claims during the design and construction phases.
2. Connections between any pasture fences intersected by the proposed project and Arizona Department of Transportation right-of-way fences will be retained or restored.
3. In order to maintain existing cattle crossings along US 60, box culverts that are 6 feet in height or greater will not be downsized and will be designed to function as cattle passes, where feasible. If this is not feasible, the Arizona Department of Transportation will contact grazing permittees for information on cattle crossing needs and arrange for the development of suitable alternative crossing locations or the provision of alternate water sources.
4. During final design, a suitable alternate water source will be developed to mitigate the displacement of the livestock tank at milepost 223.9.
5. During final design, the Arizona Department of Transportation will further evaluate potential impacts of the project on the drainages at milepost 213.1 and milepost 226.1 and coordinate with the appropriate floodplain management agencies to ensure that any encroachments into the floodplain will be minimized.
6. During final design, the project plans will be reviewed to verify the extent of encroachment into Waters of the U.S. As appropriate, permits required under Sections 401 and 404 of the Clean Water Act will be obtained by the Arizona Department of Transportation prior to construction in these areas.
7. Because one or more acres of land will be disturbed, an Arizona Pollutant Discharge Elimination System permit will be required. The Arizona Department of Transportation Roadside Development Section will determine who will prepare the Storm Water Pollution Prevention Plan.
8. Cactus ferruginous pygmy-owl surveys will be conducted during design for each construction segment in accordance with U.S. Fish and Wildlife Service guidelines. Surveys will ensure complete coverage of suitable habitat and will be scheduled during the two survey seasons (annually, January through June) immediately preceding construction. If any cactus ferruginous pygmy-owls are located during the surveys, the Federal Highway Administration and Arizona Department of Transportation will reinitiate Section 7 consultation with the U.S. Fish and Wildlife Service.
9. The Arizona Department of Transportation will contribute \$100,000 to the Arizona Game and Fish Department for use in future cactus ferruginous pygmy-owl research by August 31, 2004. The Arizona Department of Transportation will provide the U.S. Fish and Wildlife Service with documentation that the transfer has occurred.
10. The Arizona Department of Transportation, in conjunction with the Federal Highway Administration, will also fund research projects conducted by the University of Arizona and Arizona Game and Fish Department in the amounts of \$279,271 and \$217,000, respectively, for cactus ferruginous pygmy-owl studies assessing road impacts to nesting and movement of owls in relation to highways.
11. To maintain the continuity of suitable cactus ferruginous pygmy-owl habitat at Reymert Wash and Queen Creek, these crossings will be designed to ensure that the canopies of the trees on each side of the road and within the median can grow to within 45 feet of each other. At these locations, native trees with a 3-inch diameter at breast height and larger that will be removed will be replaced with 5- to 15-gallon container plants at a 4 to 1 ratio. Plantings will be concentrated both directly behind the guardrail up to the right-of-way fence and from 15 to 40 feet from the guardrails both within the median and outside of the outer bridge barriers, so that the tree canopies will grow to reach the bridge barriers at maturity, minimizing the gap in vegetation across the roadway to approximately 45 feet. Any trees that die within a two-year establishment period will be replaced.
12. For portions of the project area within State Trust or private lands, a final plant salvage plan for the inventory, salvage, storage and transplanting of protected native plants including saguaro and agave will be developed by the Arizona Department of Transportation during final design. All healthy, salvageable saguaros within the project area will be salvaged and transplanted, in accordance with the plant salvage plan.
13. For portions of the project area within Tonto National Forest lands, a final plant salvage plan for the inventory, salvage, storage and transplanting of native plants will be developed by the Arizona Department of Transportation in coordination with the Tonto National Forest during final design. Healthy, salvageable saguaro, agave, ocotillo and barrel cactus within Tonto National Forest lands in the project area will be salvaged and transplanted, in accordance with the plant salvage plan.
14. The Arizona Department of Transportation will provide instructional materials for all supervisory construction personnel regarding the protection of Federal, State or Tonto National Forest special status species, including all agreed-upon environmental stipulations for each construction segment. The materials will also address federal and state laws regarding these species, including collection and removal as well as the importance of these resources and the purpose~~and~~ need for protecting them. All encounters with these species will be immediately reported to the Arizona Department of Transportation Resident Engineer.
15. Final design will incorporate the Arizona Department of Transportation Game Fence Specification for all portions of the project that are not immediately adjacent to development.

16. For portions of the project area within State Trust or private lands, the Roadside Development Section will notify the Arizona Department of Agriculture at least 60 days prior to the start of construction to afford commercial salvagers the opportunity to remove and salvage any plants that are not incorporated into project plant salvage and revegetation plans.
17. To minimize the negative visual impact caused by clearing, existing vegetation will be avoided to the greatest possible extent. During final design, the Arizona Department of Transportation will develop the seed mix in coordination with the Tonto National Forest. Disturbed areas will be seeded with a seed mix consisting of native species. Within 30 feet of the roadway shoulders, the seed mix will include grasses, annuals, and perennials, including, but not limited to, desert hackberry, gray thorn, white-thorn acacia, catclaw acacia, and creosote (as available). Beyond 30 feet from the shoulders, native tree seed will be included in the seed mix. In addition, disturbed areas will be revegetated with salvaged ocotillo, saguaro, agave, and barrel cactus. Revegetation plans will identify, where applicable, the need for mulching, topsoil salvaging, topsoiling, and other necessary treatments to promote successful plant establishment.
18. Topsoil salvaging will be performed in disturbed areas that are to be reseeded. Topsoil from the site will be salvaged and reinstalled prior to seeding.
19. During final design, individual construction segments of the project area will be surveyed by the Arizona Department of Transportation Natural Resources Section to determine if invasive species are present within the segment. If invasive species are found, Natural Resources Section staff will treat these species prior to construction and will continue any necessary treatments following construction completion. These treatment efforts will be coordinated with Tonto National Forest staff if invasive species are found on National Forest land.
20. In order to minimize negative visual impacts within the proposed right-of-way limits, the slopes will be rounded and contoured to match the adjacent landforms, when feasible. The appearance of final cut and fill slope faces will be improved by slope warping, blending the ends of slopes, scarifying and varying the slope ratios. To achieve a natural appearance in cut slopes, the area around existing rock outcroppings will be excavated to expose them. If necessary, the outcroppings will be stained to match existing rock in the area.
21. Undulating (irregular) vegetative boundaries will be used instead of straight lines to reduce visual impacts at vegetation clearing limits within the proposed right-of-way. Feathering (selective thinning within transitional areas) will be done to reduce the density of vegetation along the edge of a clearing and to create a more natural transition from the existing vegetation into the cleared area. In addition, the existing vegetation will be selectively cleared to provide a gradation of tall vegetation down to low vegetation at the clearing edge.
22. Bridges within Tonto National Forest lands in the project area will be designed to blend with natural landforms in form, texture and color. Visible elements of culverts will be colored to match their surroundings.
23. The selected alternative will be designed to be consistent with the scenic road designation, to minimize impacts to visual resources, and to enhance views wherever possible, including, but not limited to, viewsheds in the vicinity of Gonzales Pass and the Boyce-Thompson Arboretum.
24. During final design, sound barriers will be considered at the following locations to mitigate projected noise impacts:
 - On the south side of US 60, from milepost 225.5 to milepost 225.7, with a break and wrap-around ends at milepost 225.6 to provide access to Mary Drive;
 - On the north side of US 60, from milepost 226.6 to milepost 226.85; and
 - On the south side of US 60, from milepost 226.7 to milepost 226.85, adjacent to El Camino Baptist Church.

The preferences of affected residents, business owners, property owners, and local officials will be considered during final design before any sound barriers are implemented.
25. A hazardous materials Initial Site Assessment will be prepared assessing potential impacts to Underground Storage Tank facilities at Hernandez Tire Service/U-Fill-It, Save Money Market, Superior Airport/Trans Valley, Superior Tigermart #115, Tosco Circle K #527/Circle K Store #2700527, Frazier's Auto Center and the unnamed facility northeast of Church Avenue and US 60.
26. During final design, the Arizona Department of Transportation will conduct assessments to determine whether the existing load-bearing structures to be modified or removed contain asbestos and whether heavy metals (e.g., lead-based paint) are present on those structures. If these hazardous materials are found as a result of the assessments, the Arizona Department of Transportation will prepare a plan detailing the proper procedures for demolition or modification of those structures and disposal of the asbestos or heavy-metal materials. In addition, the Arizona Department of Transportation will obtain any permits required for the demolition of the structures or disposal of asbestos or heavy-metal materials.
27. Because the proposed project will impact cultural resources that are eligible for the National Register of Historic Places under criterion d, a Programmatic Agreement regarding eligible sites that cannot be avoided has been executed among the State Historic Preservation Office, Federal Highway Administration, Forest Service, and Arizona Department of Transportation. The stipulations contained in the Programmatic Agreement will be fully satisfied prior to the beginning of construction of each design segment.
28. The Arizona Department of Transportation will contact utility company representatives during final design to identify and address utility conflicts.
29. During final design, any substantive change in vertical and horizontal alignment from that presented in the Final Location/Design Concept Report and documented in this Environmental Assessment will be reviewed for any additional social, economic or environmental impacts.
30. Culverts necessary for drainage throughout the project area will be designed to be reasonably maintainable and to facilitate use by reptiles and other small animals to minimize impacts to wildlife movement.

Arizona Department of Transportation Globe District Responsibilities

- 1. In accordance with Arizona Pollutant Discharge Elimination System requirements, the Globe District will submit the Notice of Intent and the Notice of Termination to the Arizona Department of Environmental Quality.
- 2. The Globe District will provide supervisory construction personnel with the Arizona Game and Fish Department’s Tortoise Handling Guidelines, directing them how to proceed in the event a desert tortoise is encountered.
- 3. If previously unidentified caves or mine shafts are encountered during construction, work will cease at that location and the Arizona Department of Transportation Resident Engineer will contact the Arizona Department of Transportation Environmental and Enhancement Group (602.712.7767) to arrange for a determination on whether these locations constitute occupied bat habitat.

Construction Contractor Responsibilities

- 1. In accordance with Arizona Pollutant Discharge Elimination System requirements, the contractor shall submit the Notice of Intent and the Notice of Termination to the Arizona Department of Environmental Quality.
- 2. The contractor shall salvage and replant healthy, salvageable saguaros, agaves, ocotillos and barrel cacti on Tonto National Forest land in accordance with the plant salvage plan.
- 3. The contractor shall salvage and replant healthy, salvageable saguaro and agave on State Trust and privately owned lands, in accordance with the plant salvage plan.
- 4. The contractor shall follow the Arizona Game and Fish Department’s Tortoise Handling Guidelines if specimens are encountered during construction.
- 5. If previously unidentified caves or mine shafts are encountered during construction, work shall cease at that location and the Arizona Department of Transportation Resident Engineer will be contacted to arrange for a determination on whether these locations constitute occupied bat habitat.

- 6. The contractor shall be responsible for adequately caring for salvaged plant material to maintain optimum health from the initiation of the salvaging operations to the completion of a two-year landscape establishment period.
- 7. All earth-moving and hauling equipment shall be washed at the contractor’s storage facility prior to its entering the construction site to prevent the introduction of invasive species.
- 8. If invasive species are found within a given construction segment in the course of the Natural Resources survey, the contractor shall wash all earth-moving and hauling equipment prior to its leaving the construction site. The contractor shall notify the Arizona Department of Transportation Natural Resources Section (602.712.6993) about the location of the wash area prior to starting any washing operations. The contractor shall obtain permission from the Arizona Department of Transportation Resident Engineer and Tonto National Forest before placing a wash area within Arizona Department of Transportation easement on Tonto National Forest land.
- 9. To minimize the negative visual impact caused by clearing, existing vegetation shall be avoided to the greatest possible extent. Disturbed areas shall be revegetated with a native seed mix including, but not limited to, grasses, annuals, and perennials, and salvaged ocotillo, saguaro, agave, and barrel cactus.
- 10. Public notices shall be distributed to area residents, businesses and community social services prior to each construction project and at regular intervals for the duration of construction in accordance with Arizona Department of Transportation standard practice. Temporary message boards shall be utilized to inform the motoring public and area residents of potential construction-related delays.
- 11. Access to Boyce Thompson Southwestern Arboretum shall be maintained throughout construction. Construction signs shall be utilized to inform visitors of any temporary changes in access to the Arboretum.
- 12. Following construction of selected Alternative D-2 and designation of existing US 60 as a local access route, permanent signs shall be installed to inform visitors of the new access route to the Arboretum.
- 13. For portions of the project area on Tonto National Forest land, the contractor shall comply with the Forest Service’s Southwestern Regional Water Policy in the identification of and environmental clearance for proposed construction water sources.

EXECUTIVE SUMMARY

Introduction

Jacobs Civil Inc. was contracted by the Arizona Department of Transportation (ADOT) to prepare a Design Concept Report (DCR) and an Environmental Assessment (EA) addressing proposed improvements to US 60 from just west of the Florence Junction (Jct) Intersection (MP 211.7) through the Town of Superior to the US 60/ State Route (SR) 177 traffic interchange (MP 226.8), all within Pinal County. The purpose of the Design Concept study and report is to develop a long-range plan that will guide future decisions regarding the ultimate improvements required to improve US 60 to meet the capacity, operational, and safety needs of the motoring public through the year 2025.

Several government agencies have been involved in the development of the alternatives and recommendations presented in this report. The Federal Highway Administration (FHWA) served as the lead agency, with the Tonto National Forest (TNF) serving as the cooperating federal agency. Both agencies, as well as ADOT's Predesign Section, technical staff, and Globe District staff, have provided input to the alternative identification and evaluation process. Pinal County's engineering and planning staff have also contributed. Other important agency/public involvement activities included agency and public scoping meetings on January 28th, 1998 and January 28th and 29th, 1998 respectively; and public information meetings on August 5, 1999 and June 16, 2001. In addition, Interdisciplinary (ID) Team meetings were held with FHWA, TNF, Arizona Game and Fish Department, and ADOT Predesign at several decision points along the study development.

US 60 Corridor

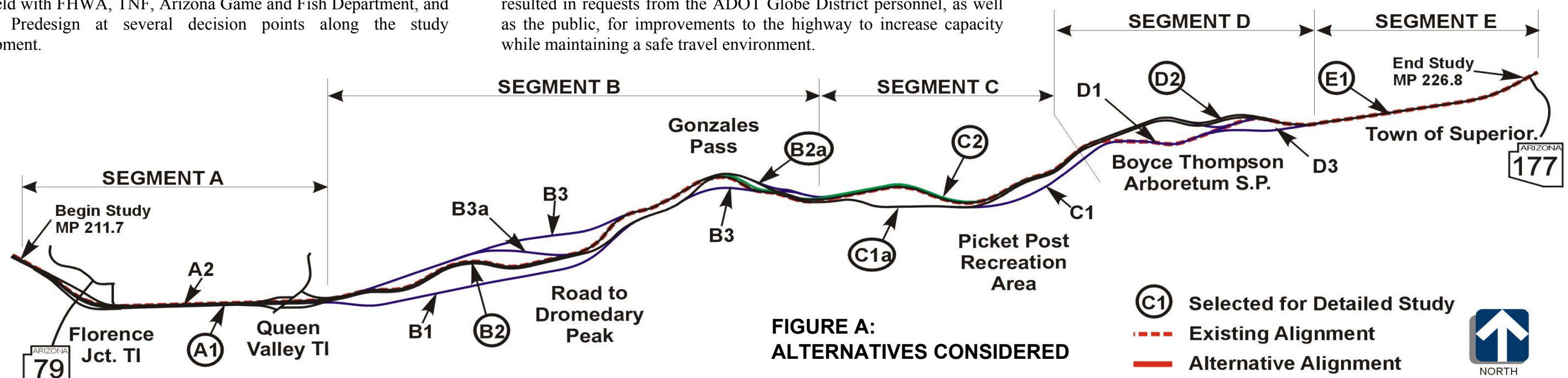
US 60 serves as a major regional transportation route connecting the Phoenix metropolitan area to recreational areas to the east and north located within the White Mountain Apache Reservation and Apache-Sitgreaves National Forest. The roadway, classified as a rural arterial, also serves as a commercial link between the Phoenix metropolitan area and several towns and communities including Superior and the Globe-Miami area. Near the east end of Globe, US 60 intersects US 70 which connects Safford and other communities in the Gila Valley to the Phoenix metro area. The segment of US 60 from Florence Junction to Superior also accommodates commuter traffic between Globe/Superior and employment destinations including the State prison in Florence and various businesses in the East Valley portion of the metropolitan Phoenix area.

Traffic volumes along the route are increasing as the population of the State experiences continued growth. As the Phoenix area continues to expand, traffic through the Florence Junction and Superior areas will increase significantly. Travel speeds are also increasing on State highways. On June 22, 1998, ADOT raised the posted speed limit of this section of US 60 from 55 mph to 65 mph. The increase in traffic speed, volume and the number of accidents reduced the operational efficiency of this section of US 60. The Level of Service rating was subsequently reduced to E during the peak hour. This reduction resulted in requests from the ADOT Globe District personnel, as well as the public, for improvements to the highway to increase capacity while maintaining a safe travel environment.

Location Analysis

In order to systematically describe and analyze design concept alternatives along US 60, the study route was subdivided into five segments based on the features and conditions peculiar to each segment. Study Segment A (MP 211.7 to 215.2) includes the developable private and State lands; Study Segment B (MP 215.2 to 219.9) includes the mountainous terrain of Gonzales Pass; Study Segment C (MP 219.9 to 222.3) represents the forest recreation lands of the Picket Post recreation area; and Study Segment D (MP 222.3 to 224.8) includes the area around the Boyce Thompson Southwestern Arboretum. Finally, Study Segment E (MP 224.8 to 226.8) encompasses all of the improvements within the Town of Superior. All of the design concept alternatives are identified by alphanumeric designations associated with the five study segments. The segments and alternative alignments studied are shown below in Figure A.

In all study segments, locating roadway improvements along the existing alignment and reuse of the existing roadbed were top priorities. During a feasibility study of this corridor, 13 study alignments were developed. Based upon agency, study team, and public evaluation and consensus, alternative alignments A-1, B-2, B-2a, C-1a, C-2, D-2, and E-1 from that study were selected for further evaluation and development into design concepts as part of this report.



Design Concept Alternatives

The various design concept alternatives studied, and ultimately identified as preferred, are shown in Figure B and briefly described below.

- **A-1:** A four-lane divided roadway with new EB lanes constructed south of the existing roadway. The existing roadway will be used for WB travel. Interchanges will be provided at Florence Jct. and Queen Valley Road.
- **B-2a:** A four-lane divided highway. The EB lanes west of Gonzales Pass are on a new independent alignment south of the existing roadway. East of the summit, new WB lanes are constructed north of the existing on an independent alignment. The existing roadway is re-used, except for a portion through the Gonzales Pass summit, which requires vertical adjustment.
- **C-2:** A four-lane divided highway, with the new WB lanes constructed north of and generally parallel to yet still independent of the existing lanes.
- **D-2:** A four-lane divided highway on new alignment north of existing US 60, and north of the Arboretum properties. Beyond Silver King Wash, the roadway transitions to the existing roadway, as an undivided 5-lane section.
- **E-1:** The existing roadway will be widened to 5-lanes through the Town of Superior.

The cost summary for the Preferred Alternative(s) is:

Construction:	\$	71,018,300
R/W:	\$	14,100,000
Design:	\$	5,681,500
Utilities	\$	4,650,000
Total:	\$	95,449,800

Note: All of the costs presented were estimated using current (1999) unit construction values. Updated 2002 estimates were provided in the Implementation Plan described in Chapter 8 for programming purposes.

Access Management Plan

Direct access to US 60 is currently allowed through permit application to ADOT’s Globe District. There are no specific restrictions on the number of turnouts allowed or the distance between turnouts, as long as adequate stopping sight distances for entering or leaving the highway is provided. However, as the volume of traffic and the proportion of commercial and recreational vehicles increases, some form of access control will be needed as a matter of highway operation and safety. Considering that US 60 from the Metro Phoenix area to the TNF Boundary (MP 217.34) is already designated as fully access controlled highway by the State Transportation Board, that portion is proposed to be reconstructed to interstate highway standards, with full access control.

Preferably, some form of partial access control should be introduced through the TNF as well, with the understanding that full access control would be implemented as conditions warrant. Accordingly, an access management plan has been prepared as part of this study, and is included in Section 8 of this report. It includes recommendations for interim (partial) access control, and provisions for future full access control as land adjacent to and within the TNF develops. The interim access control involves permitting a limited number of right-in/right-out entrances and median crossovers at major intersections, and will be implemented with each reconstruction segment in the TNF. Later, the at-grade intersections can be converted to grade separated interchanges to provide full access control. The turnouts, as noted in the proposed improvements, can later be eliminated as other means of access will be provided.

Implementation Plan

US 60 will be reconstructed in segments consistent with ADOT’s priorities and funding. The preferred alternative (A-1, B-2a, C-1a, D-2, and E-1) was divided into logical improvement (reconstruction) projects based upon the following priority guidelines:

- Projects that improve safety in high accident areas.
- Sequencing of projects to achieve continuous stretches of four-lane roadway, wherever possible.
- Projects that reconstruct segments having high maintenance costs.
- Projects that improve capacity consistent with need.
- Projects that could experience constructability issues as traffic volumes increase.
- Projects in the \$5 to \$15 million range wherever possible to correlate with expected funding availability.

Table A summarizes the implementation projects for improving US 60 between MP 211.7 and MP 226.8. Figure C on page iii illustrates the project locations.

The US 60/SR 79: Florence Junction Traffic Interchange (TI) project was determined to be eligible for accelerated design and construction funding. As a result, a separate Project Assessment, Environmental Categorical Exclusion, and design package was prepared in advance of the completion of this study and environmental document. While construction of this interchange was completed in 2003, the evaluation process remains documented in this report as it remained the western limit of this study.

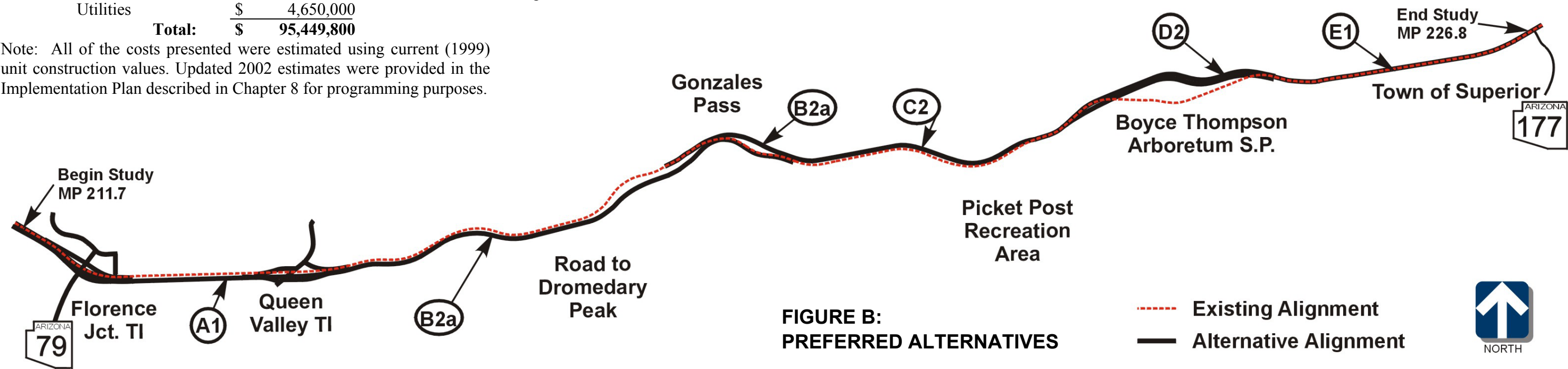


FIGURE B: PREFERRED ALTERNATIVES

Table A
Implementation Plan

Project No.	Section	Location	Description	Cost		
1	Florence Jct. TI*	MP 211.7 – 213.6	Reconstruct US 60 to cross over SR 79, including ramps and El Camino Viejo.	Complete 2003		
2	Gonzales Pass	MP 216.3 – 219.8	Construct EB lanes west of Summit, WB lanes on the east side of the Summit.	Constr: \$12,601,000 Design: \$1,008,000	R/W: 1,000,000 Utilities: \$2,000,000	
3	Queen Valley	MP 213.6 – 216.3	Construct new EB lanes completing the divided highway between Florence Jct and Gonzales Pass.	Constr: \$6,802,000 Design: \$545,000	R/W: \$7,000,000 Utilities: \$150,000	
4	Picket Post	MP 219.8 – 222.3	Construct new EB lanes between Reymert Wash and Queen Creek.	Constr: \$8,630,000 Design: \$690,000	R/W: - Utilities: \$100,000	
5	Silver King	MP 222.3 – 224.7	Construct new EB & WB bypass north of the Arboretum.	Constr: \$14,068,000 Design: \$1,125,000	R/W: \$1,000,000 Utilities: \$2,000,000	
7	Town of Superior	MP 224.7 – 226.8	Improve the existing 3-lane to a 5-lane section with portions curbed.	Constr: \$8,800,000 Design: \$704,000	R/W: \$500,000 Utilities: \$500,000	
6	Queen Valley TI	MP 214 – 215	Construct full access controlled, grade-separated interchange over Queen Valley Rd and the Arizona Magma Railroad.	Constr: \$13,615,000 Design: \$1,090,000	R/W: - Utilities: -	

* Completed Projects

FIGURE C:
PROJECT LIMITS
PER PROPOSED
IMPLEMENTATION PLAN

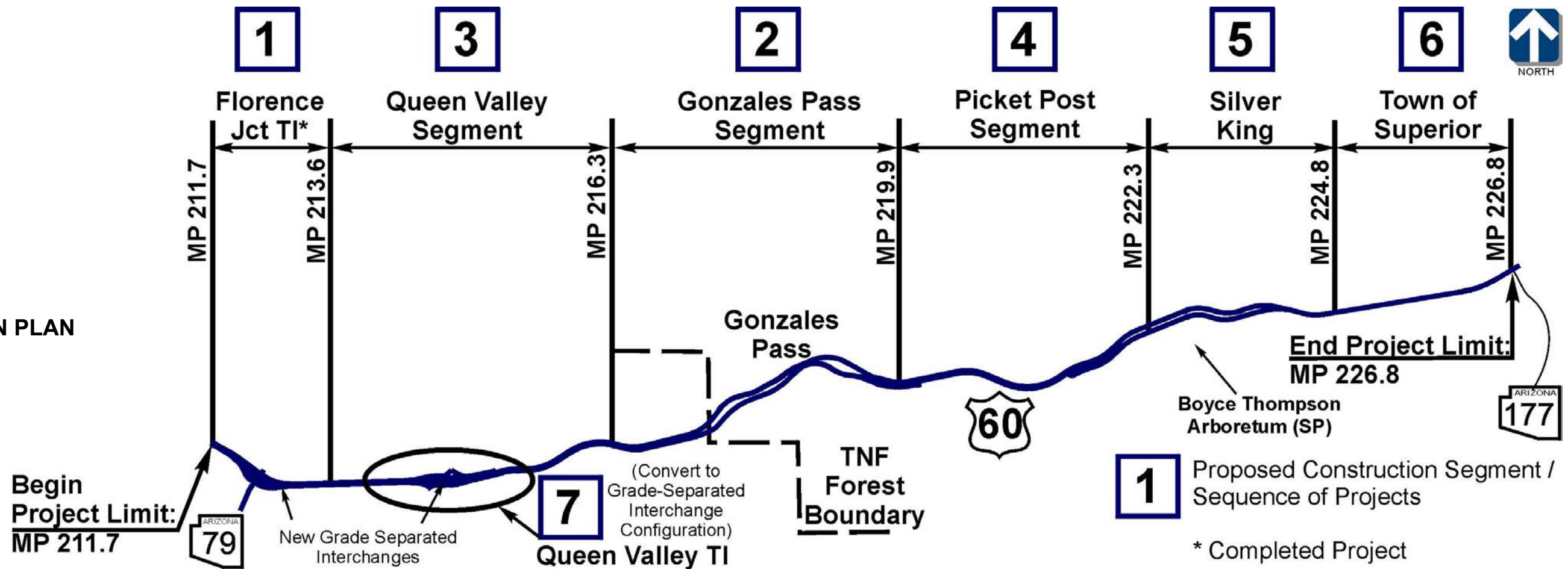


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